



**CONESTOGA-ROVERS
& ASSOCIATES**

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June 12, 2009

Reference No. 027545-00

Mr. Kenny Jaynes
Chief, Compliance Section
U.S. Army Corps of Engineers
Galveston District Regulatory Branch
P.O. Box 1229
Galveston, Texas 77553-1229

Dear Mr. Jaynes:

Re: Wetland Delineation Data Report
Star Lake Canal Superfund Site
Port Neches, Jefferson County, Texas

Conestoga-Rovers & Associates (CRA), on behalf of Chevron Environmental Management Company (CEMC) and Huntsman Petrochemical Company (Huntsman), submits herein to the Galveston District, U.S. Army Corps of Engineers (USACE) the Wetland Delineation Data Report for the Star Lake Canal Superfund Site located in Jefferson County, Texas (Site). The U.S. Environmental Protection Agency (EPA) entered into an Administrative Settlement Agreement and Order on Consent (AOC) for Remedial Investigation/Feasibility Study (RI/FS) (CERCLA Docket No. 06-02-06) with CEMC and Huntsman for the Site in December 2005.

This Report is a presentation of data on wetlands potentially under the jurisdiction of the USACE at a portion of the Site that is currently under investigation as part of the RI/FS. This report is provided to inform your office that contractors working on behalf of CEMC and Huntsman plan to clear limited amounts of wooded areas in and near wetlands with the use of mechanized equipment at the Site.

Should you have any questions or require additional information regarding this submittal, please contact CRA or Mr. Gary Jacobson at (713) 432-2636.

Yours truly,

CONESTOGA ROVERS & ASSOCIATES

Pressley L. Campbell, PhD
TX PE 76931

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DGM/lcs/1



9536789

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& ASSOCIATES**

June 12, 2009

- 2 -

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Encl.

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WETLAND DELINEATION DATA REPORT

**STAR LAKE CANAL SUPERFUND SITE
PORT NECHES, JEFFERSON COUNTY, TEXAS**

Prepared For:

**Chevron Environmental Management Company
4800 Fournace Place, E 534A
Bellaire, Texas 77401**

**JUNE 2009
REF. NO. 027545-00 (12)**

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 BACKGROUND	1
3.0 WETLAND DELINEATION AREA	3
3.1 LOCATION	3
3.2 DESCRIPTION	3
4.0 FIELD SURVEY	4
4.1 GENERAL	4
4.2 PRELIMINARY DESKTOP REVIEW	4
4.3 FIELD PERSONNEL	5
5.0 SITE-SPECIFIC DATA	5
5.1 SOILS	5
5.2 VEGETATION	6
5.3 HYDROLOGY	6
5.4 WATERS OF THE UNITED STATES	7
6.0 RESULTS	7
7.0 SUMMARY	8
8.0 REFERENCES	8

LIST OF FIGURES
(Following Text)

FIGURE 1	VICINITY MAP
FIGURE 2	WETLAND DELINEATION AREA
FIGURE 3	NATIONAL WETLANDS INVENTORY MAP
FIGURE 4	SOIL SURVEY MAP

LIST OF APPENDICES

APPENDIX A	ROUTINE WETLAND DETERMINATION DATA FORMS
APPENDIX B	APPROVED JURISDICTIONAL DETERMINATION FORM
APPENDIX C	SITE PHOTOGRAPHS

1.0 INTRODUCTION

On behalf of Chevron Environmental Management Company (CEMC) and Huntsman Petrochemical Corporation (Huntsman), Conestoga-Rovers & Associates, Inc. (CRA) submits herein to the Galveston District of U.S. Army Corps of Engineers (USACE) a Wetland Delineation Data Report (Report) for a portion of the Star Lake Canal Superfund Site (Site) near Port Neches, Jefferson County, Texas. The U.S. Environmental Protection Agency (EPA) entered into an Administrative Settlement Agreement and Order on Consent (AOC) for Remedial Investigation/Feasibility Study (RI/FS) (CERCLA Docket No. 06-02-06) with CEMC and Huntsman for the Site in December 2005. CRA and ENTRIX, Inc. (ENTRIX) provide technical services to CEMC and Huntsman for the Site. This Report is a presentation of data on wetlands potentially under the jurisdiction of the USACE at a portion of the Site that is currently under investigation as part of the RI/FS.

The Site consists of Star Lake Canal, Jefferson Canal, Gulf States Utilities Canal, Molasses Bayou, and the adjacent wetland areas. The Site is defined in the AOC as the lengths of the two industrial canals from their origins to the confluence of Star Lake Canal and the Neches River and the adjacent wetlands. The Site is located in Jefferson County, Texas, in and around the cities of Port Neches and Groves.

This objective of this Report is to present field data on the three diagnostic characteristics of wetlands, field data on the characteristics of tributaries to traditional navigable waters of the United States, an opinion on the presence and potential extent of wetlands, and an opinion on USACE jurisdiction. This report was prepared in accordance with guidance found in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Engineer Waterways Experiment Station 1987), the *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (U.S. Army Corps of Engineers, October 2008), and the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency 2007).

2.0 BACKGROUND

Wetlands are defined in federal regulations as, "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." For property to be considered wetlands under the jurisdiction of the USACE, it must have a hydrophytic plant community,

hydric soils, saturation in the root zone of plants for at least 5 percent of the growing season in consecutive days; and must be adjacent to, hydrologically connected to, or have a significant nexus with traditional navigable waters. Each of these characteristics will be described for the area delineated.

In approximately February 1983, the Jefferson County Drainage District Number 7 (DD #7) dredged Jefferson Canal by dragline after acquiring an easement on the canal from Texaco Chemical Company (TCC). The DD #7 deposited dredged materials onto the banks of Jefferson Canal in and around an area south of FM Road 366. The deposited dredged spoil material was subsequently determined to contain potentially hazardous constituents.

The RI work planned for the Jefferson Canal spoil pile area includes evaluation of the spoil piles and determination of the feasibility of long-term remedial action. Prior to evaluation of the spoil piles, vegetation removal is required. The spoil piles along Jefferson Canal are currently covered with dense vegetation. Removal of trees, brush, vegetation, and/or any surface obstructions is necessary to remove the hazards cited above and complete the necessary RI work. The Jefferson Canal spoil piles will be trimmed of vegetation and limited debris with the use of mechanical equipment. Any trees present will be trimmed and cut at the ground surface. The trees, brush and/or vegetation will be chipped and mulched into small pieces with the use of whole-tree chippers. These mulched materials will be spread on the ground surface for beneficial reuse at the completion of vegetation clearing activities. Any other surface or subsurface obstructions present in the spoil pile areas, such as concrete blocks, will also be removed, to the degree practical. A routine long-term maintenance program will be established to manage vegetative growth at the spoil piles throughout duration of the RI/FS activities. Topographic surveying and mapping will be completed by a licensed land surveyor to assist in the identification and surface delineation of the spoil piles. Following completion of the vegetation removal and topographic mapping, a work scope will be prepared that further outlines additional investigation that may be necessary to assess the nature and extent of impact within the piles, and the potential risk to human and ecological receptors.

Wetlands were delineated near the downstream portion of Jefferson Canal. This report will be provided to the Galveston District of the USACE, the EPA, and the trustees. As established by Regulatory Guidance Letter 85-07, issued by USACE Headquarters, and confirmed by subsequent Headquarters guidance, neither the State of Texas nor the EPA are required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act for actions taken at Sites under the authority of CERCLA.

3.0 WETLAND DELINEATION AREA

3.1 LOCATION

The Site is located near Port Neches, Texas, approximately 2 miles northwest of the interchange of Highway TX 366 and Highway TX 73, in Jefferson County. The wetland delineation area consists of portions of the Jefferson Canal Spoil Pile Area of Investigation (AOI) and the Jefferson Canal Downstream AOI at the Site. The geographic coordinates near the center of the area delineated are N 29° 57' 54.6", W 93° 55' 5.6". The area delineated is best accessed from the south roadside of a private drive west of Pine Top Road at the approximate geographic coordinates N 29° 58' 0.1", W 93° 55' 4.2". The center of the area delineated is approximately 0.16 mile south of Star Lake Canal and 3.7 miles west of Sabine Lake.

The Site is located between the two municipalities of Port Neches to the west and Groves to the south. Immediately to the north is an area of marsh associated with the floodplain of the Neches River, which flows in a southeasterly direction to Sabine Lake, approximately 4 miles to the east. The overall setting is within the Texas coastal plain, between developed areas to the south and west, and natural areas to the north and east.

A vicinity map that shows the location of the Site is included as Figure 1. Figure 2 shows the locations of the Jefferson Canal Spoil Pile and Jefferson Canal Downstream AOIs and the area delineated.

3.2 DESCRIPTION

CRA delineated an area proposed for mechanized land clearing that includes portions of the Jefferson Canal Spoil Pile and Jefferson Canal Downstream AOIs, shown on Figure 2. The spatial extent of the Jefferson Canal Spoil Pile AOI will be modified to include the area recently evaluated and identified to contain dredged spoils. The area delineated includes spoil piles, parts of nearby fallow fields, and a limited area of bottomland hardwoods. The area delineated is bordered to the east by a Jefferson Canal, to the west by pasture, to the south by the Kansas City Southern Railroad right-of-way, and to the north by a levee private access road to the Jefferson Canal pump station operated by the Jefferson County DD #7.

The area is vegetated by two distinct communities, an early successional bottomland hardwood forest and fallow agricultural field. The field is typical of upland pasture used primarily for grazing cattle, and supports upland grasses. Cattle were observed

foraging. The forested area, which includes the spoil piles, is densely vegetated in the understory and midstory by vines, shrubs, and saplings. The overstory is thin, with few mature trees.

The spoil piles are vegetated by an early successional bottomland hardwood forest and are densely vegetated in the understory and midstory. The crest of the spoil piles are approximately four feet above the surrounding terrain.

The topography gently slopes 2 to 5 degrees down to the northeast with approximately 10 feet of variance in elevation throughout the area delineated. A series of canals, levees, dams, and a pump station control the overall hydrology in the vicinity. The area delineated drains to the northeast towards Jefferson Canal, which joins with Star Lake Canal to the north and ultimately to the Neches River.

4.0 FIELD SURVEY

4.1 GENERAL

On March 8 and 9, 2009, CRA field personnel completed a field survey to inspect the proposed vegetation removal area. Nine surface soil samples were collected to characterize local habitat and determine wetland characteristics. Sample locations were chosen throughout the area to represent homogeneous areas and to help define wetland/non-wetland boundaries. At each sample location, dominant vegetative species were recorded, soil samples were collected and examined for identification and determination of hydric properties, and observations were made on hydrologic conditions. Photographs 1 through 9 show sample locations and portions of the area delineated (Appendix C). Data collected from the 9 sample locations are summarized on Routine Wetland Determination Data Forms attached in Appendix A. Sample locations are shown on Figure 2.

4.2 PRELIMINARY DESKTOP REVIEW

Prior to the field survey, CRA completed a preliminary review of available mapped information for the Site. Sources reviewed include the local Natural Resources Conservation Service (NRCS) soil survey, the NRCS Web Soil Survey, the USGS 7.5-minute topographic map "Port Neches, Texas," the National Wetlands Inventory map, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), Light Detection and Ranging (LIDAR) contour data, and recent aerial

photography. The National Wetlands Inventory map identifies freshwater forested/shrub wetlands adjacent to the east side, and an area of mixed freshwater forested/shrub and freshwater emergent wetlands to the west of the area delineated. Figure 3 shows National Wetlands Inventory map information for the area delineated. The FIRM (City of Port Neches, Texas, Jefferson County) shows that the area delineated is between the 100-year floodplain and the 500-year floodplain.

4.3 FIELD PERSONNEL

Field data were collected by Mr. Brandon Owens and Mr. Matt Brown of CRA, and Mr. John Williams of ENTRIX. Mr. Owens is a biologist with 5 years of experience performing wetland delineations and 6 years of experience identifying vegetation. Mr. Brown is a biologist with 1 year of experience performing wetland delineations and identifying vegetation. Mr. Williams is a biologist with 2 years of experience performing wetland delineations and 4 years of experience identifying vegetation. Data were reviewed by Mr. David Marschall, a wetland specialist with 30 years of experience working with the Section 404 regulatory program. Messrs. Owens, Brown, and Marschall have received qualification training for the Corps of Engineers Wetland Delineator Certification Program.

5.0 SITE-SPECIFIC DATA

5.1 SOILS

The NRCS *Web Soil Survey* shows that the area delineated may be underlain by Franeau clay, 0 to 1 percent slopes, and League-Urban land complex, 0 to 1 percent slopes. Samples were collected to approximately 20 inches below the soil surface. The depth of each sample was sufficient to determine changes in the upper horizons and to observe field indicators of hydric soil. Soil samples were described and compared to descriptions and maps in the soil survey. Figure 4 shows soils in the area of the Site as mapped by the USDA.

Field survey data generally agree with the soil survey. Observations indicate that the area delineated is underlain by League-Urban land complex, 0 to 1 percent slopes, on the eastern two-thirds, and Franeau clay, 0 to 1 percent slopes on the western third.

Soils of the League Series are nearly level clays found on the coastal prairie. They are somewhat poorly drained, exhibit very slow permeability and high runoff, and are listed

as hydric soils on the NRCS National Hydric Soils list. In the vicinity of the area delineated, they are found in association with Urban land, the name given to areas disturbed or manipulated to the extent that they have lost natural soil profiles or may be paved or covered by buildings. Disturbed profiles were observed throughout the area delineated, but particularly in and around the spoil piles. Despite the historical disturbance, indicators of hydric soils were observed in areas mapped as League-Urban land complex.

Franeau clay, 0 to 1 percent slopes, was observed on the western third of the area delineated, particularly in the fallow pasture. Franeau clay is listed as a non-hydric soil on the NRCS National Hydric Soils list.

5.2 VEGETATION

The wetland delineation area is vegetated by an early successional bottomland hardwood forest on and adjacent to the spoil piles, and fallow pasture between the spoil piles. The forest is densely vegetated in the understory and midstory. Dominant midstory species include poison sumac, hackberry, green ash, mulberry, black willow, Drummond red maple, and tallow. Dominant understory species include wild strawberry, green flat-sedge, soft rush, pepper vine, swamp mallow, wild onion, sawtooth blackberry, and southern dewberry. There are only a few mature sugarberry, green ash, and tallow. The non-forested areas support grasses and field species that are typical of a fallow pasture. The open fields are dominated by St. Augustine grass, dandelion, sweet pea, crow poison, horseflyweed, yellow sweet clover, and eastern pasqueflower.

The criterion for wetland vegetation was met at most sample locations in the young forest but not in the fields. Herbaceous wetland plants were absent from the spoil piles, as was wetland hydrology. However, despite the rise in elevation, woody hydrophytic plants were observed on the spoil piles likely due to the nearby seed sources.

5.3 HYDROLOGY

The landscape slopes gently to the northeast and appears to drain directly towards Jefferson Canal. Natural hydrology has been modified by levees and other embankments for flood control. With the exception of the spoil piles, primary indicators of wetland hydrology were observed within the wooded areas, including inundation, soil saturation in the upper 12 inches, water marks, drift lines, and drainage patterns in

wetlands. Secondary indicators of wetland hydrology observed include water-stained leaves and positive FAC-Neutral Tests. No wetland hydrology indicators were observed in the open fields.

5.4 WATERS OF THE UNITED STATES

Jefferson Canal is a first-order tributary of the Neches River, which is a traditional navigable water (TNW) of the United States. Jefferson Canal outfalls into Star Lake Canal. This canal is a relatively permanent water (RPW), and in the opinion of CRA and ENTRIX will fall under USACE jurisdiction. Data on Jefferson Canal is presented on Approved Jurisdictional Determination Form in Appendix B.

6.0 RESULTS

Data were gathered and observations were made in portions of the Jefferson Canal Spoil Pile and Jefferson Canal Downstream AOIs at the Star Lake Canal Superfund Site in Jefferson County, Texas. Conditions were documented at 9 sample locations. The findings include:

- Soils: The area delineated was observed to be entirely underlain by Franeau clay and soils of the League-Urban land Complex. Most soil profiles had inclusions of spoil from the excavation of Jefferson Canal. Franeau clay, 0 to 1 percent slopes, is a non-hydric soil and was observed in open fields. Soils of the League-Urban land complex, 0 to 1 percent slopes, were observed in the wooded areas. League clay is a hydric soil that occurs next to two spoil piles. The spoil material does not have a normal soil profile, and does not exhibit hydric properties.
- Vegetation: Forested areas, including the spoil piles, are dominated by wetland vegetation. Open pasture within the delineation area is dominated by upland grasses and forbs.
- Hydrology: Primary and secondary indicators of wetland hydrology were observed predominantly in the wooded areas, but not on the spoil piles. Wetland hydrology indicators were not observed in the open fields.
- Waters of the United States: There is one tributary of the Neches River within the area delineated. The body of water is observed to be relatively permanent water.

7.0 SUMMARY

Positive evidence of the diagnostic characteristics of wetlands was found at 6 of the 9 sample locations across the wetland delineation area. Approximately 5.5 acres appear to meet the technical criteria for wetlands based on guidance in the *Corps of Engineers Wetlands Delineation Manual*. Based on the adjacency of relatively permanent waters and traditional navigable waters, it is the opinion of CRA and ENTRIX that these wetlands would likely be considered jurisdictional by the Galveston District of the USACE. This Report serves as a notification of the planned Site activities as a permit is not required for proposed work in wetland areas at the Site. During the course of the planned RI/FS activities, impacts to wetlands at the Site will be minimized to the extent practical. Figure 2 shows shaded areas that indicate potential jurisdictional wetlands identified within the area delineated.

8.0 REFERENCES

Environmental Laboratory, *Corps of Engineers Wetlands Delineation Manual*, U.S. Army Engineer Waterways Experiment Station, 1987.

Environmental Laboratory, *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, U.S. Army Corps of Engineers Wetlands Regulatory Assistance Program, October 2008.

Federal Insurance Administration, Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map, "City of Port Neches, Texas, Jefferson County," Community-Panel Number 485500 0005D, January 1983.

National Cooperative Soil Survey, Web Soil Survey (websoilsurvey.nrcs.usda.gov). U.S. Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 2008

Soil Conservation Service, *Soil Survey of Jefferson County, Texas*, U.S. Department of Agriculture, 1977.

U.S. Fish and Wildlife Service, *National List of Plant Species That Occur in Wetlands: South Plains (Region 6)*, U.S. Department of Interior, 1988.


U.S. Fish and Wildlife Service, National Wetlands Inventory, web mapping.

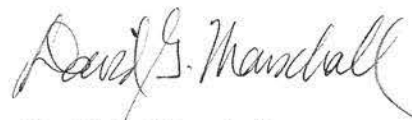
U.S. Geological Survey, 7.5-Minute Series Topographic Map "Port Neches, Texas,"
U.S. Department of Interior, 1992.

U.S. Geological Survey, 7.5-Minute Series Topographic Map "Port Neches, Texas," U.S.
Department of Interior, 1995.

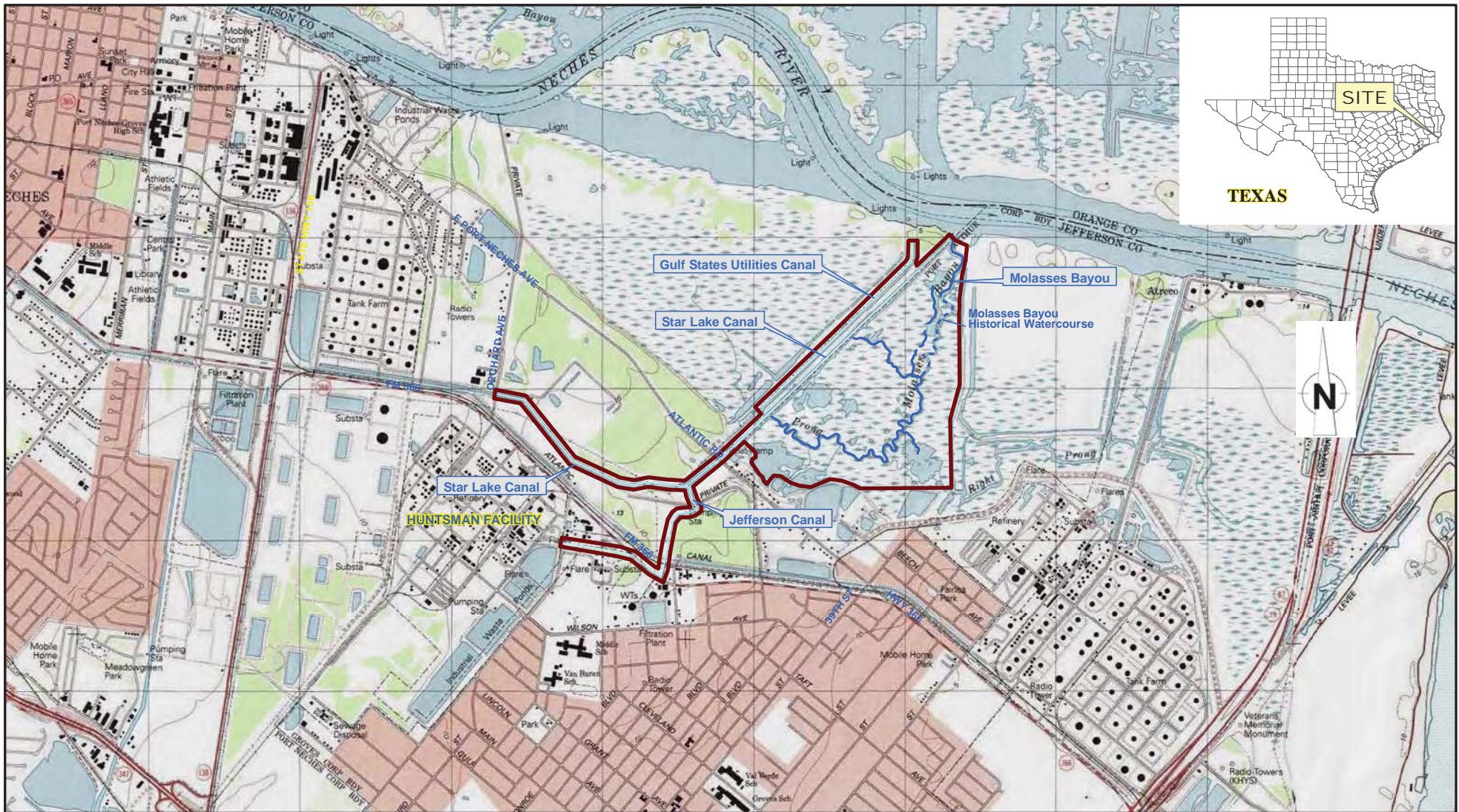
Should you have any questions or require additional information regarding this submittal,
please contact the undersigned.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES


Pressley L. Campbell, PhD
Texas PE 76931
6/11/09


David G. Marschall

FIGURES

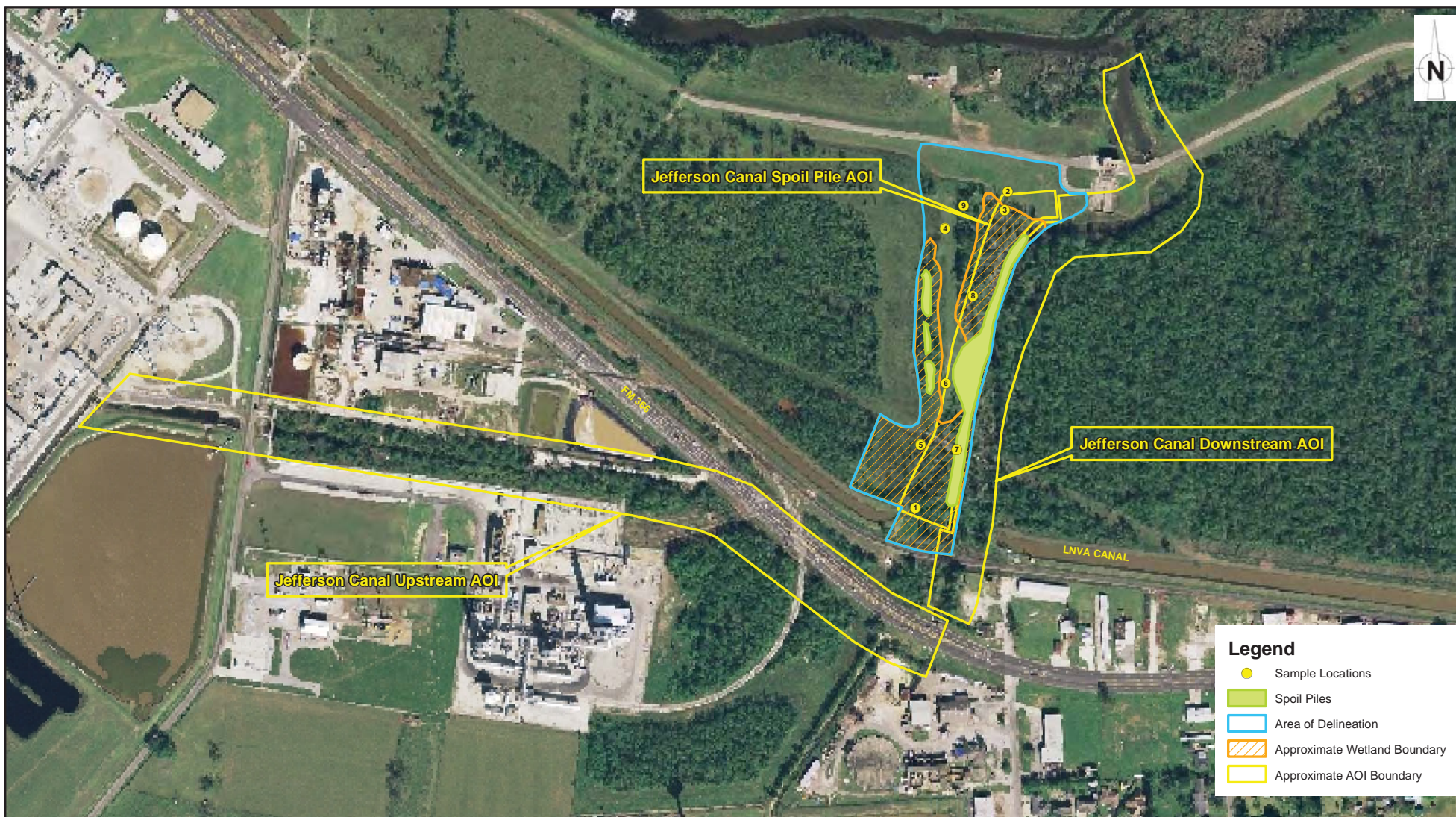


RE: USGS 7.5 Minute Topographic Maps.



0 1,000 2,000
Feet

figure 1
VICINITY MAP
WETLAND DELINEATION DATA REPORT
STAR LAKE CANAL SUPERFUND SITE, JEFFERSON COUNTY, TEXAS
Chevron Environmental Management Company, Bellaire, Texas

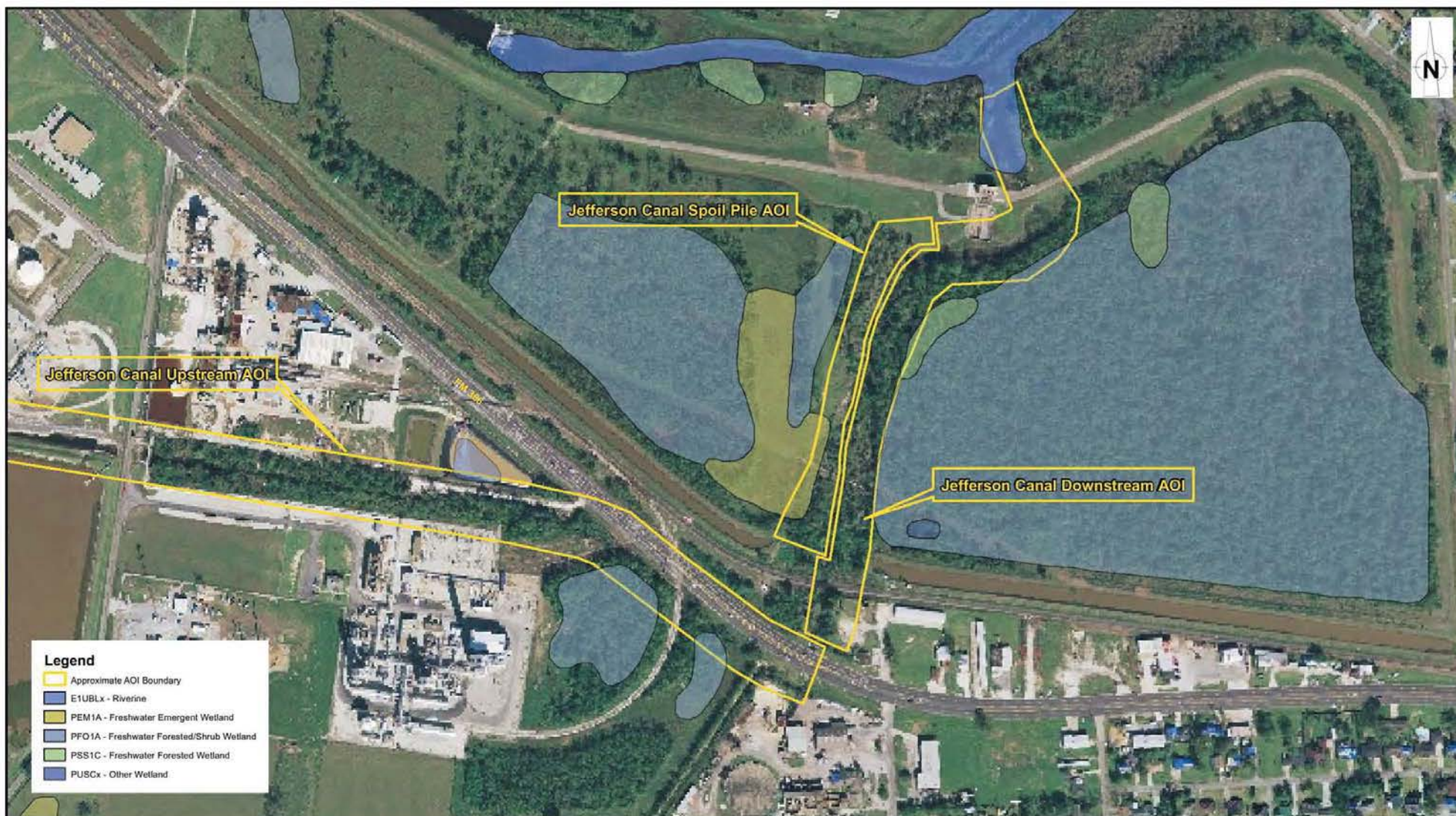


RE: AERIAL PHOTOGRAPH OBTAINED FROM CHEVRON PIPELINE, DATED NOVEMBER 2005.



0 150 300
Feet

figure 2
WETLAND DELINEATION AREA
WETLAND DELINEATION DATA REPORT
STAR LAKE CANAL SUPERFUND SITE, JEFFERSON COUNTY, TEXAS
Chevron Environmental Management Company, Bellaire, Texas



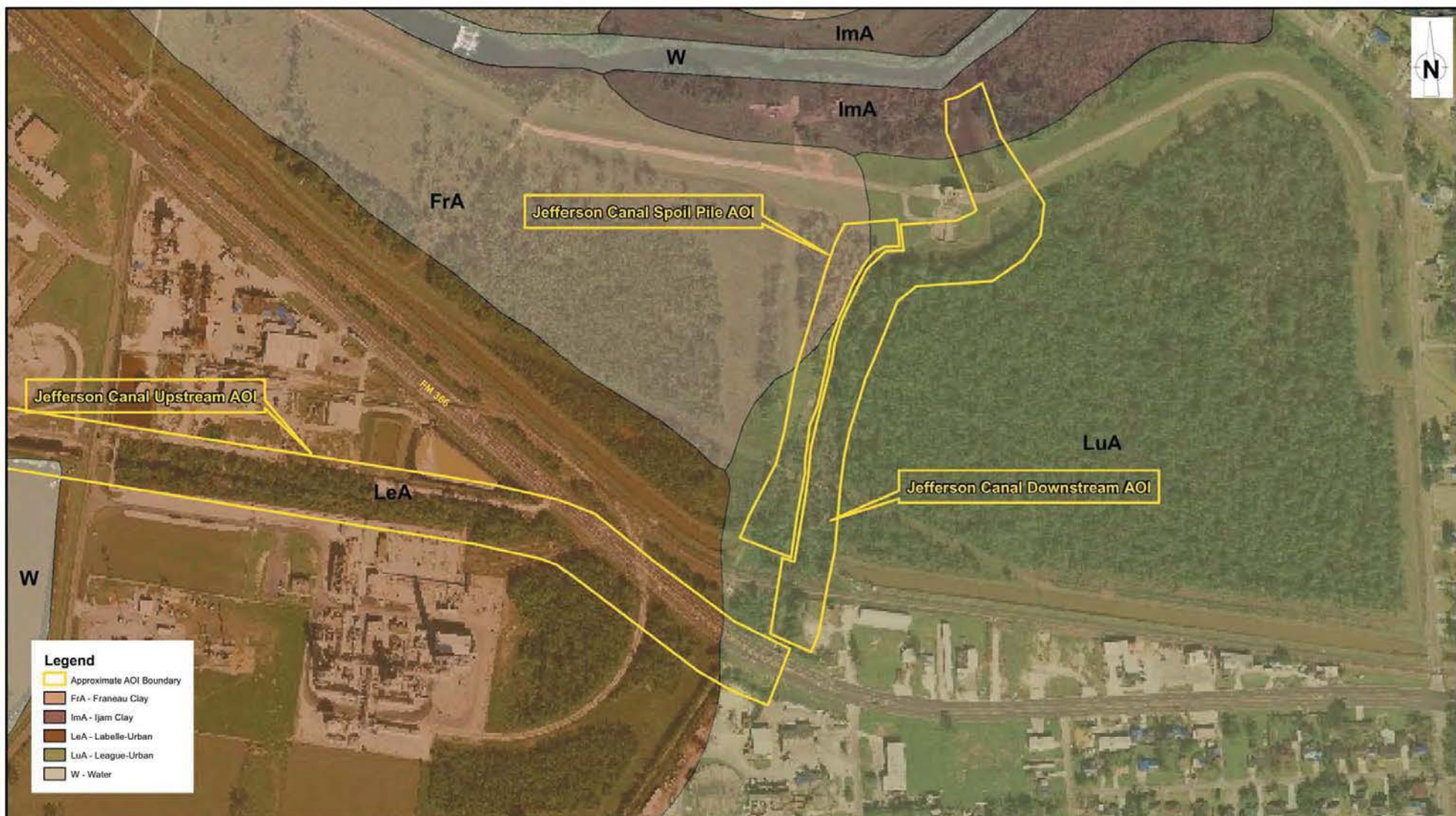
RE: Aerial photograph obtained from Chevron Pipe Line, Dated November 2005.

U. S. Fish and Wildlife Service. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. <http://www.fws.gov/nwi/>



0 150 300
Feet

figure 3
NATIONAL WETLANDS INVENTORY MAP
WETLAND DELINEATION DATA REPORT
STAR LAKE CANAL SUPERFUND SITE, JEFFERSON COUNTY, TEXAS
Chevron Environmental Management Company, Bellaire, Texas



RE: Aerial photograph obtained from Chevron Pipe Line, Dated November 2005.

U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Jefferson County, Texas.



0 150 300
Feet

figure 4
SOIL SURVEY MAP
WETLAND DELINEATION DATA REPORT
STAR LAKE CANAL SUPERFUND SITE, JEFFERSON COUNTY, TEXAS
Chevron Environmental Management Company, Bellaire, Texas

APPENDIX A

ROUTINE WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09

Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 1

Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2

Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 48.11" Long: W 93° 55' 06.87" Datum: WGS84

Soil Map Unit Name: League-Urban land complex NWI Classification: _____

Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks:
 Southeastern portion of AOI

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaved (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (c6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
(includes capillary fringe)				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

 Sampling Point 1

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Salix nigra</i>	40	Y	FACW+
2.	<i>Morus rubra</i>	25	Y	FACU+
3.	<i>Sapium sebiferum</i>	15	N	FACU
4.	<i>Celtis occidentalis</i>	15	N	FAC
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		95	= Total Cover	
Dominance Test worksheet:				
Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)				
Total Number of Dominant Species Across All Strata: _____ (B)				
Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)				
Prevalence Index worksheet:				
<div style="display: flex; justify-content: space-between;"> <div>Total % Cover of:</div> <div>Multiply by:</div> </div>				
OBL species _____ x1 = _____				
FACW species _____ x2 = _____				
FAC species _____ x3 = _____				
FACU species _____ x4 = _____				
UPL species _____ x5 = _____				
Column Totals: _____ (A) _____ (B)				
Prevalence Index = B/A = _____				
Hydrophytic Vegetation Indicators:				
_____ Dominance Test is >50%				
_____ Prevalence Index is ≤3.0 ¹				
_____ Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata:				
Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).				
Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.				
Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.				
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.				
Woody vine - All woody vines, regardless of height.				
Hydrophatic Vegetation Present? Yes <u>Y</u> No _____				
Remarks: (If observed, list morphological adaptations below).				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10 YR 4/1	70	10 YR 3/6	5	D	M	F, F	
	10 YR 4/2	30						
8"+	10 YR 3/1	100	10 YR 4/6	7	D	M	C, F, D	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histrol (A-1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matric (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F(20)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> (MLRA 153B)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF-12) (LRR T, U)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (If observed):	Hydric Soil Present? Yes _Y_ No __
Type: _____	
Depth (Inches): _____	

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09
 Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 2
 Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 10
 Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 59.25" Long: W 93° 55' 03.82" Datum: WGS84
 Soil Map Unit Name: Franeau clay, 0 to 1 % slopes, occasionally flooded NWI Classification: Partially hydric
 Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N Soil Y or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>NA</u> No _____	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: Fielded area south of pump station road		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaved (B9)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Marl Deposits (B15) (LRR U)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (c6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
(includes capillary fringe)				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry field

VEGETATION - Use scientific names of plants.

 Sampling Point 2

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Sapling Stratum		(Plot size: _____)			Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Shrub Stratum		(Plot size: _____)			Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Herb Stratum		(Plot size: _____)			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Stenotaphrum secundatum</i>	90	Y	FAC+	
2.	<i>Trifolium repens</i>	30	Y	FACU+	
3.	<i>Nothoscordum bivalve</i>	30	Y	FAC	
4.	<i>Taraxacum officinale</i>	10	N	FACU+	
5.	<i>Fragaria virginiana</i>	10	N	FAC	
6.	<i>Baptisia tinctoria</i>	5	N	FAC	
7.					
8.					
9.					
10.					
11.					
12.					
		175	= Total Cover		
Woody Vine Stratum		(Plot size: _____)			
1.					
2.					
3.					
4.					
5.					
			= Total Cover		
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; width: 100%;"> Yes _____ No _____ X _____ </div>

Profile Description: (Descrie to the depth needed to document the indicator or cnfirm the absense of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20"	Spoil Mix 2/1							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1) (LRR O)

Loamy Gleyed Matrix (F2)

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No _X_

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09
 Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 3
 Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2
 Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 57.94" Long: W 93° 55' 03.88" Datum: WGS84
 Soil Map Unit Name: Franeau clay, 0 to 1 % slopes, occasionally flooded NWI Classification: Partially hydric
 Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks: Southeastern portion of AOI			

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<u>X</u> Surface Water (A1)	_____ Water-Stained Leaved (B9)	_____ Surface Soil Cracks (B6)
_____ High Water Table (A2)	<u>X</u> Aquatic Fauna (B13)	_____ Sparsely Vegetated Concave Surface (B8)
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15) (LRR U)	<u>X</u> Drainage Patterns (B10)
<u>X</u> Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	<u>X</u> Moss Trim Lines (B16)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Dry-Season Water Table (C2)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	<u>X</u> Crayfish Burrows (C8)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (c6)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Geomorphic Position (D2)
<u>X</u> Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Shallow Aquitard (D3)
		<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes <u>X</u> No _____	Depth (inches)	<u>1-6"</u>	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No _____	Depth (inches)	_____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Water in pit 4"+

VEGETATION - Use scientific names of plants.

 Sampling Point 3

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Salix nigra</i>		30	Y	FACW+	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. <i>Acer rubrum ssp. Drummondii</i>		25	Y	FACW	
3. <i>Sapium sebiferum</i>		10	N	FACU+	
4. <i>Celtis occidentalis</i>		5	N	FAC	
5. <i>Fraxinus pennsylvanica</i>		5	N	FACW-	
6. _____					
7. _____					
		75	= Total Cover		
Sapling Stratum	(Plot size: _____)				Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
			= Total Cover		
Shrub Stratum	(Plot size: _____)				Prevalence Index = B/A = _____ Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <i>Myrica cerifera</i>		15	Y	FAC+	
2. <i>Acer rubrum ssp. Drummondii</i>		10	Y	FACW	
3. _____					
4. _____					
5. _____					
6. _____					
		25	= Total Cover		
Herb Stratum	(Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Alternanthera philoxeroides</i>		40	Y	OBL	
2. <i>Hydrocotyle umbellata</i>		10	N	OBL	
3. <i>Typha latifolia</i>		10	N	OBL	
4. <i>Andropogon glomeratus</i>		10	N	FACW+	
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
		70	= Total Cover		
Woody Vine Stratum	(Plot size: _____)				
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
			= Total Cover		
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Yes <u>Y</u> No _____ </div>

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-8	10 YR 4/1	100						
8"+	10 YR 5/1	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

X

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes _Y_ No __

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09
 Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 4
 Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 10
 Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 58.07" Long: W 93° 55' 06.50" Datum: WGS84
 Soil Map Unit Name: Franeau clay, 0 to 1 % slopes, occasionally flooded NWI Classification: Partially hydric
 Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: Agricultural Field West of Jefferson Canal		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaved (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (c6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches) _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches) _____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches) _____	
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Dry field			

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Sapling Stratum (Plot size: _____)					Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Herb Stratum (Plot size: _____)					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Stenotaphrum secundatum</i>	90	Y	FAC+	
2.	<i>Trifolium repens</i>	20	Y	FACU+	
3.	<i>Nothoscordum bivalve</i>	20	Y	FAC	
4.	<i>Taraxacum officinale</i>	10	N	FACU+	
5.	<i>Fragaria virginiana</i>	30	Y	FAC	
6.	<i>Rubus trivialis</i>	5	N	FAC	
7.					
8.					
9.					
10.					
11.					
12.					
		175	= Total Cover		
Woody Vine Stratum (Plot size: _____)					
1.	<i>Ampelopsis arborea</i>	10	Y	FAC	
2.					
3.					
4.					
5.					
		10	= Total Cover		
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; width: 100%;"> Yes _____ No _____ X _____ </div>

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6"	10 YR 4/2	100						
6"+	10 YR 2/1	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No _X_

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09

Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 5

Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2

Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 50.75" Long: W 93° 55' 07.08" Datum: WGS84

Soil Map Unit Name: League-Urban land complex NWI Classification: Not hydric

Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
<u>X</u> Surface Water (A1)	_____ Water-Stained Leaved (B9)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Drainage Patterns (B10)
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15) (LRR U)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (c6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
<u>X</u> Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes <u>X</u> No _____	Depth (inches)	<u>1-4"</u>	
Water Table Present?	Yes <u>X</u> No _____	Depth (inches)	<u>14"</u>	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No _____	Depth (inches)	<u>2"+</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water in pit 14"+

VEGETATION - Use scientific names of plants.

 Sampling Point 5

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Sapling Stratum		(Plot size: _____)			Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> <div> Total % Cover of: OBL species _____ FACW species _____ FAC species _____ FACU species _____ UPL species _____ Column Totals: _____ (A) </div> <div> Multiply by: x1 = _____ x2 = _____ x3 = _____ x4 = _____ x5 = _____ _____ (B) </div> </div> Prevalence Index = B/A = _____
1.	<i>Sapium sebiferum</i>	15	Y	FACU+	
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Shrub Stratum		(Plot size: _____)			Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			= Total Cover		
Herb Stratum		(Plot size: _____)			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Cyperus virens</i>	30	Y	FACW	
2.	<i>Hydrocotyle umbellata</i>	20	Y	OBL	
3.	<i>Eleocharis macrostachya</i>	15	N	OBL	
4.	<i>Juncus effusus</i>	15	N	OBL	
5.	<i>Rubus trivialis</i>	10	N		
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		90	= Total Cover		
Woody Vine Stratum		(Plot size: _____)			
1.					
2.					
3.					
4.					
5.					
			= Total Cover		
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Yes <u>Y</u> No _____ </div>

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20"	10 YR 4/1	100	10 YR 5/8	10	D	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1) (LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1) (LRR O)

Loamy Gleyed Matrix (F2)

X

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12) (LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes _Y_ No _

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09

Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 6

Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2

Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 58.07" Long: W 93° 55' 06.50" Datum: WGS84

Soil Map Unit Name: League-Urban land complex NWI Classification: Not hydric

Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil Y or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: Area between spoil piles		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaved (B9)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Marl Deposits (B15) (LRR U)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (c6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
(includes capillary fringe)				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry field

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			
Sapling Stratum (Plot size: _____)					Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.	<i>Sapium sebiferum</i>	20	Y	FACU+	
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			
Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
		= Total Cover			
Herb Stratum (Plot size: _____)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Stenotaphrum secundatum</i>	75	Y	FAC+	
2.	<i>Trifolium repens</i>	20	Y	FACU+	
3.	<i>Nothoscordum bivalve</i>	20	Y	FAC	
4.	<i>Taraxacum officinale</i>	10	N	FACU+	
5.	<i>Fragaria virginiana</i>	30	Y	FAC	
6.	<i>Rubus trivialis</i>	5	N	FAC	
7.					
8.					
9.					
10.					
11.					
12.					
		160 = Total Cover			
Woody Vine Stratum (Plot size: _____)					
1.					
2.					
3.					
4.					
5.					
		10 = Total Cover			
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Yes _____ No _____ X _____ </div>

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20"	10 YR 2/1	40						
	Spoil	60						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No _X_

Remarks:

Matrix = 60% Spoil

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/08/09
 Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 7
 Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2
 Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 57.94" Long: W 93° 55' 03.88" Datum: WGS84
 Soil Map Unit Name: League-Urban land complex NWI Classification: Not hydric
 Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N Soil Y or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>NA</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks: 0-20" = 100% Spoil			

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	<u>X</u> Water-Stained Leaved (B9)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Marl Deposits (B15) (LRR U)	_____ Moss Trim Lines (B16)
<u>X</u> Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (c6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard D3
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches)	_____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Salix nigra</i>		20	Y	FACW+	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. <i>Sapium sebiferum</i>		10	Y	FACU+	
3. <i>Fraxinus pennsylvanica</i>		10	Y	FACW	
4. <i>Celtis occidentalis</i>		5	N	FAC	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
		75	= Total Cover		
Sapling Stratum (Plot size: _____)					Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B)
1. <i>Toxicodendron vernix</i>		60	Y	OBL	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
		_____	= Total Cover		
Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <i>Morus rubra</i>		20	Y	FACU	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
		20	= Total Cover		
Herb Stratum (Plot size: _____)					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Solidago arguta</i>		10	N	FACU	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
		10	= Total Cover		
Woody Vine Stratum (Plot size: _____)					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 10px;"> Yes <u>Y</u> No _____ </div>
1. <i>Clematis pitcheri</i>		30	Y	FACU	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
		30	= Total Cover		
Remarks: (If observed, list morphological adaptations below).					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	Spoil	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

X

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No __

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/09/09
 Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 8
 Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2
 Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 56.78" Long: W 93° 55' 04.31" Datum: WGS84
 Soil Map Unit Name: Franeau clay, 0 to 1 % slopes, occasionally flooded NWI Classification: Partially hydric
 Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N Soil Y or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>NA</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: 4"+ = 100% Spoil		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaved (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (c6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches)	_____	
(includes capillary fringe)				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																			
1. <i>Salix nigra</i>	30	Y	FACW+	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																		
2. <i>Fraxinus pennsylvanica</i>	15	N	FACW																			
3. <i>Celtis occidentalis</i>	15	N	FAC																			
4. <i>Cornus drummondii</i>	5	N	FAC																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
65 = Total Cover																						
Sapling Stratum (Plot size: _____)				Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> <table style="width: 100%;"> <tr> <td>OBL species</td> <td>_____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species</td> <td>_____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species</td> <td>_____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species</td> <td>_____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species</td> <td>_____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals:</td> <td>_____ (A)</td> <td>_____ (B)</td> </tr> </table> Prevalence Index = B/A = _____	OBL species	_____	x1 = _____	FACW species	_____	x2 = _____	FAC species	_____	x3 = _____	FACU species	_____	x4 = _____	UPL species	_____	x5 = _____	Column Totals:	_____ (A)	_____ (B)
OBL species	_____	x1 = _____																				
FACW species	_____	x2 = _____																				
FAC species	_____	x3 = _____																				
FACU species	_____	x4 = _____																				
UPL species	_____	x5 = _____																				
Column Totals:	_____ (A)	_____ (B)																				
1. <i>Toxicodendron vernix</i>	25	Y	OBL																			
2. <i>Cornus drummondii</i>	15	Y	FAC																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
40 = Total Cover																						
Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) _____ ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																		
1. <i>Morus rubra</i>	20	Y	FACU																			
2. <i>Ilex vomitoria</i>	10	Y	FAC-																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
30 = Total Cover																						
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.																		
1. <i>Rubus trivialis</i>	20	Y	FAC																			
2. <i>Hibiscus moscheutos</i>	20	Y	OBL																			
3. <i>Juncus effusus</i>	10	N	OBL																			
4. <i>Hydrocotyle umbellata</i>	10	N	OBL																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
9. _____	_____	_____	_____																			
10. _____	_____	_____	_____																			
11. _____	_____	_____	_____																			
12. _____	_____	_____	_____																			
60 = Total Cover																						
Woody Vine Stratum (Plot size: _____)																						
1. <i>Clematis pitcheri</i>	30	Y	FACU																			
2. <i>Toxicodendron radicans</i>	15	Y	FAC																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
45 = Total Cover																						
Remarks: (If observed, list morphological adaptations below).				Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Yes <u>Y</u> No _____ </div>																		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix	Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4	10 YR 3/1	80						20% Spoil
4"+	Spoil	90						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No __

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Star Lake Canal Superfund Site / Jefferson Canal City/County: Port Neches / Jefferson Sampling Date: 04/09/09

Applicant/Owner: Chevron Environmental Management Company State: TX Sampling Point: 9

Investigator(s): Brandon L. Owens / Matt D. Brown Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Slope Slope (%): 2

Subregion (LRR or MLRA): LRR T Lat: N 29° 57' 57.87" Long: W 93° 55' 05.19" Datum: WGS84

Soil Map Unit Name: Franeau clay, 0 to 1 % slopes, occasionally flooded NWI Classification: Partially hydric

Are climate/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: Dry		

HYDROLOGY

Wetland Hydrology Indicators		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaved (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (c6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches) _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches) _____	
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches) _____	
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indications of hydrology present			

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.	<i>Celtis occidentalis</i>	65	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2.	<i>Sapium sebiferum</i>	20	Y	FACU+	
3.					
4.					
5.					
6.					
7.					
		85	= Total Cover		
Sapling Stratum	(Plot size: _____)				Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.					
2.					
3.					
4.					
5.					
6.					
			= Total Cover		
Shrub Stratum	(Plot size: _____)				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<i>Ilex vomitoria</i>	20	Y	FAC-	
2.					
3.					
4.					
5.					
6.					
		20	= Total Cover		
Herb Stratum	(Plot size: _____)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Rubus trivialis</i>	25	Y	FAC	
2.	<i>Cyperus retrosus</i>	20	Y	FAC	
3.	<i>Trifolium repens</i>	20	Y	FACU+	
4.	<i>Rubus argutus</i>	10	N	FACU+	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		75	= Total Cover		
Woody Vine Stratum	(Plot size: _____)				
1.	<i>Toxicodendron radicans</i>	20	Y	FAC	
2.					
3.					
4.					
5.					
		20	= Total Cover		
Remarks: (If observed, list morphological adaptations below).					Hydrophatic Vegetation Present? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Yes _____ No _____ X _____ </div>

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix	Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4	10 YR 3/1	80						20% Spoil
4"+	Spoil	90						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Historol (A-1)

Histic Epipedon (A2)

Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Organic Bodies (A6) (LRR P, T, U)

5 cm Mucky Mineral (A7) (LRR P, T, U)

Muck Presence (A8) (LRR U)

1 cm Muck (A9) (LRR P, T)

Depleted Below Dark Surface (A11)

Thick Dark Surface (A12)

Coast Prairie Redox (A16) (MLRA 150A)

Sandy Mucky Mineral (S1)(LRR O, S)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Stripped Matrix (S6)

Dark Surface (S7) (LRR P, S, T, U)

Polyvalue Below Surface (S8) (LRR S, T, U)

Thin Dark Surface (S9) (LRR S, T, U)

Loamy Mucky Mineral (F1)(LRR O)

Loamy Gleyed Matrix (F2)

Depleted Matrix (F3)

Redox Dark Surface (F6)

Depleted Dark Surface (F7)

Redox Depressions (F8)

Marl (F10) (LRR U)

Depleted Ochric (F11) (MLRA 151)

Iron-Manganese Masses (F12)(LRR O, P, T)

Umbric Surface (F13) (LRR P, T, U)

Delta Ochric (F17) (MLRA 151)

Reduced Vertic (F18) (MLRA 150A, 150B)

Piedmont Floodplain Soils (F19) (MLRA 149A)

Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

1 cm Muck (A9) (LRR O)

2 cm Muck (A10) (LRR S)

Reduced Vertic (F18) (outside MLRA 150A,B)

Piedmont Floodplain Soils (F19) (LRR P, S, T)

Anomalous Bright Loamy Soils (F(20) (MLRA 153B)

Red Parent Material (TF2)

Very Shallow Dark Surface (TF-12) (LRR T, U)

Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (Inches):

Hydric Soil Present?

Yes __ No X

Remarks:

APPENDIX B

APPROVED JURISDICTIONAL DETERMINATION FORM

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/parish/borough: Jefferson City: Port Neches
Center coordinates of site (lat/long in degree decimal format): Lat. 29.9652° **N**, Long. 93.9182° **W**.
Universal Transverse Mercator: WGS84

Name of nearest waterbody: Jefferson Canal

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Star Lake Canal

Name of watershed or Hydrologic Unit Code (HUC): 12020003

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): 3/8-9/2009

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☒ Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 1150 linear feet: 6 width (ft) and/or acres.

Wetlands: NA acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):³

☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: .

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: _____.

Summarize rationale supporting determination: _____.

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”: _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: _____ inches

Average annual snowfall: _____ inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

☐ Tributary flows directly into TNW.

☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: _____.

Identify flow route to TNW⁵: _____.

Tributary stream order, if known: _____.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

<input type="checkbox"/> Silts	<input type="checkbox"/> Sands	<input type="checkbox"/> Concrete
<input type="checkbox"/> Cobbles	<input type="checkbox"/> Gravel	<input type="checkbox"/> Muck
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Vegetation. Type/% cover:	
<input type="checkbox"/> Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .

Presence of run/riffle/pool complexes. Explain: .

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

Tributary has (check all that apply):

<input type="checkbox"/> Bed and banks	
<input type="checkbox"/> OHWM ⁶ (check all indicators that apply):	
<input type="checkbox"/> clear, natural line impressed on the bank	<input type="checkbox"/> the presence of litter and debris
<input type="checkbox"/> changes in the character of soil	<input type="checkbox"/> destruction of terrestrial vegetation
<input type="checkbox"/> shelving	<input type="checkbox"/> the presence of wrack line
<input type="checkbox"/> vegetation matted down, bent, or absent	<input type="checkbox"/> sediment sorting
<input type="checkbox"/> leaf litter disturbed or washed away	<input type="checkbox"/> scour
<input type="checkbox"/> sediment deposition	<input type="checkbox"/> multiple observed or predicted flow events
<input type="checkbox"/> water staining	<input type="checkbox"/> abrupt change in plant community
<input type="checkbox"/> other (list):	
<input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: .	

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

<input checked="" type="checkbox"/> High Tide Line indicated by:	<input checked="" type="checkbox"/> Mean High Water Mark indicated by:
<input type="checkbox"/> oil or scum line along shore objects	<input type="checkbox"/> survey to available datum;
<input type="checkbox"/> fine shell or debris deposits (foreshore)	<input type="checkbox"/> physical markings;
<input type="checkbox"/> physical markings/characteristics	<input type="checkbox"/> vegetation lines/changes in vegetation types.
<input type="checkbox"/> tidal gauges	
<input type="checkbox"/> other (list):	

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: .

Identify specific pollutants, if known: .

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☐ Directly abutting

☐ Not directly abutting

☐ Discrete wetland hydrologic connection. Explain: .

☐ Ecological connection. Explain: .

☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- ☐ TNWs: linear feet width (ft), Or, acres.
- ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
- ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- ☒ Tributary waters: **1150** linear feet **6** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- ☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
☐ Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- ☐ Demonstrate that impoundment was created from “waters of the U.S.,” or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰**Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.**

Provide estimates for jurisdictional waters in the review area (check all that apply):

- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - ☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - ☐ Office concurs with data sheets/delineation report.
 - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
 - ☐ USGS NHD data.
 - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☒ National wetlands inventory map(s). Cite name: figure 3 - National Wetlands Inventory Map.
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☐ Aerial (Name & Date): .
or ☒ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

APPENDIX C

SITE PHOTOGRAPHS



PHOTOGRAPH 1: View of sample location 2 (looking north).



PHOTOGRAPH 2: View of sample location 3 (looking south).



PHOTOGRAPH 3: View of soil sample pit at sample location 3.



PHOTOGRAPH 4: View of sample location 4 (looking north).



PHOTOGRAPH 5: View of sample location 5 (looking south).



PHOTOGRAPH 6: View of sample location 6 (looking north).



PHOTOGRAPH 7: View of sample location 7 (looking east).



PHOTOGRAPH 8: View of sample location 8 (looking north).



PHOTOGRAPH 9: View of sample location 9 (looking west).